Weather and Climate

Western Arctic Parklands Winter 2013-2014 Weather Summary

In Kotzebue, it was the second warmest winter on record and +8.9° F warmer than normal. This is largely due to a widespread and long-lasting weather pattern which affected all of Alaska in January. A high pressure system pumped warm air from the tropics for almost two weeks. The result was high winds, wet snow, and many broken temperature records:

Record high temperatures:
Dec 6: 37° F
Dec 7: 36° F
Jan 23: 35° F
Jan 24: 36° F
Jan 25: 36° F
Jan 26: 37° F
*Jan 27: 40° F
Jan 28: 38° F
Feb 26: 31° F
Feb 27: 34° F
*Jan. record

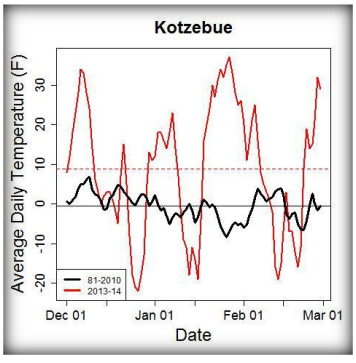
January 23-28 and February 27 all had record high *minimum* temperatures.

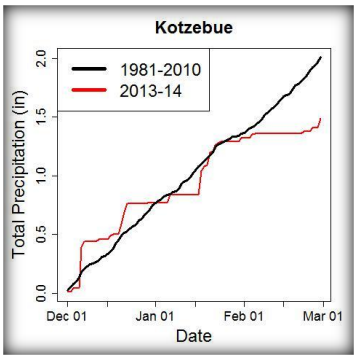
December was warmer than normal with average precipitation. The average temperature for the month was 5.9° F compared to a normal of 2.3° F. The month started out well above normal, with a high of 37° F on December 6, breaking the old daily record. It was also a windy start to winter, with gusts over 30 mph each day December 1-6. Temperatures from December 11-23 were near normal with average temperatures near 0° F and little diurnal variation. The end of the month was colder than normal, with a minimum temperature of -26° F on December 26. The warm temperatures prevented much snow from accumulating in December – only 7 inches on the ground at the end of the month. Snowfall was below normal for the month (7.2 inches in 2014 vs. 11.5 inches normally), but precipitation was almost exactly normal at 0.75 inches. The difference is due to the wet and windy storm event on December 6 which brought over 0.3 inches of rain.

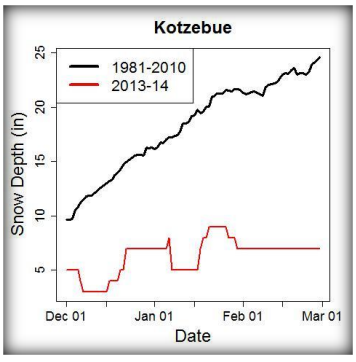
January was hot – the third warmest on record after 1981 and 1985. 21 out of 31 days were warmer than normal and the month was an amazing +17.1° F warmer than normal. Daily temperature records were broken on each day January 23rd – 27th. The 40° F temperature recorded on January 27 was a new all-time high for January. Preceding the warm spell, temperatures were just below freezing with wind and wet snow on the 17th and 20th. 3.8 inches of snow fell from January 17-24 containing 0.45 inches of water. Overall, January precipitation was 89% of normal. The snow depth at the end of January was only 7 inches compared to a normal value of about 20 inches. The difference was largely due to warm temperatures and high winds.

The first week of February continued with well-above average temperatures. Temperatures cooled for the middle two weeks of February with a monthly low of -24° F on February 13th. The last week of the month warmed back up, with a record breaking temperature of 34° F on February 27 accompanied by high winds and wet snow. Only 0.20 inches of precipitation accumulated in February and 1.2 inches of snow, well below the normal values of 0.66 inches and 9.6 inches respectively.

Kotzebue – Average air temperatures, cumulative precipitation, and snow depth for 2013 (red) compared to normal (black)







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Kotzebue Weather Records:
Climate Normal Period 1981 – 2010
Climate Record Period 1897 – 2014

Temperature

Winter 2013-2014	Average Monthly Temp °F	1981-2010 Normal °F	Departure from Normal °F	Monthly High °F / Date	Monthly Low °F / Date
December	5.9	2.3	**+3.6**	37 / Dec 6	-26 / Dec 26
January	14.3	-2.8	**+17.1**	40* / Jan 27	-22 / Jan 16
February	5.3	-0.8	**+6.1**	34 / Feb 27	-24 / Feb 13

Winter Season Temperature Departure from Normal: +8.9°F
*Record high for January

Precipitation

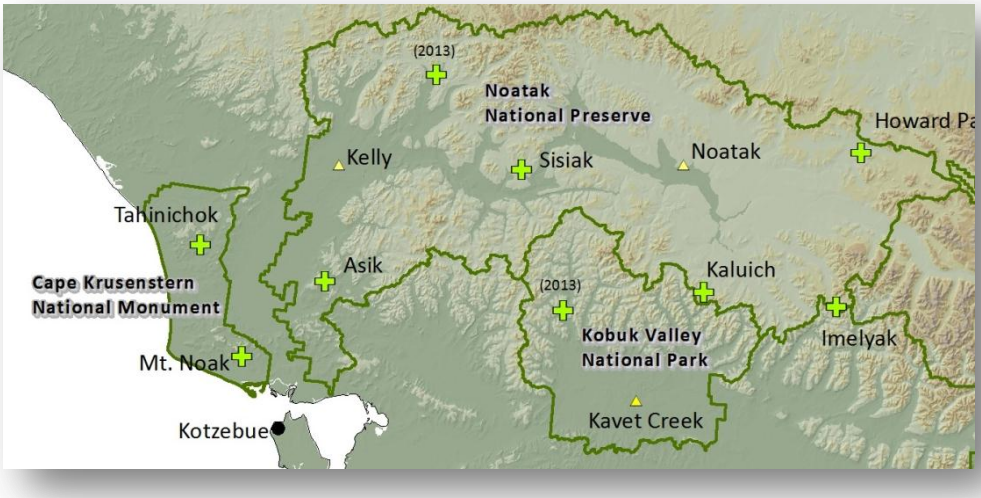
Winter 2013-2014	Total Monthly Precip in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24–hr total in. / Date	# Days with >=0.01 in.Water
December	0.75	0.76	**-0.01**	0.37 / Dec 6-7	11
January	0.55	0.62	**-0.07**	0.24 / Jan 17-18	10
February	0.20	0.66	**-0.46**	0.08 / Feb 28	6

Winter Season Precipitation Departure from Normal: -0.18 inches

Snowfall

Winter 2013-2014	Total Monthly Snowfall in.	1981-2010 Normal in.	Departure from Normal in.	Greatest 24 – hr snowfall total in. / Date	Cumulative since 1-July in.	Normal Snowfall from July 1 in.
December	7.2	11.5	**-4.3**	2.0 / Dec 22	18.9	26.1
January	4.9	9.1	**-4.2**	1.9 / Jan 17	23.8	35.2
February	1.2	9.6	**-8.4**	0.5 / Feb 28	25.0	44.8

We now have additional NPS climate stations in Cape Krusenstern, Noatak, and Kobuk Valley that complement existing National Weather Service stations at Kotzebue and along the Kobuk River to the south. The new NPS stations will provide critical data on high elevation sites in the Arctic and will help characterize the climate gradients and patterns affecting resources in the Western Arctic parklands.



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Arctic Network RAWS weather summaries – Winter 2013-2014:

Park	Site	Elev. ft.	Avg Temp °F Dec	Jan	Feb	Winter Avg Temp °F	Extremes °F High	Low	Peak Wind mph	Seasonal Temp Spread °F *
CAKR	Tahinichok	966	9.1	15.7	8.2	11.0	39	-26	58	65
NOAT	Asik	1329	10.2	17.7	9.6	12.5	48	-25	66	73
	Kelly	382	5.5	12.4	5.7	7.9	42	-27	47	69
	Sisiak	1823	5.1	10.5	3.2	6.3	42	-33	65	75
	Noatak	985	-3.2	-0.7	-6.8	-3.6	37	-43	70	80
	Howard Pass	2062	3.2	8.2	-2.9	2.8	48	-43	103**	91
	Kaluich***	2486	2.0	14.5	-1.5	5.0	46	-39	62	85
	Imelyak	3569	6.9	16.7	7.1	10.2	51	-32	57	83
KOVA	Kavet Creek	235	-0.2	9.1	2.2	3.7	39	-41	43	80
	Salmon River	1201	4.7	12.4	4.7	7.3	40	-24	67	64

*Difference between the high and low temperature for the season.
**Howard Pass wind sensor failed 22 hours after 103 mph wind gust reading.
***Kaluich, 3 days missing in December. 5 days missing in January.

Note: Preliminary data have not undergone final quality control and are subject to revision.

Interesting notes from RAWS stations:

- Temperatures rose above freezing at all the ARCN NPS stations each day January 24-29. The maximum temperature of 51° F at Imelyak occurred on January 27. For perspective, the average temperature at Imelyak for July 2013 was only 46° F.
- On February 14th, the National Weather Service reported that the Howard Pass station set a new record low wind chill for Alaska. The hourly average temperature was -42° F with an average wind speed of 71 mph, resulting in a -97° F wind chill. A gust of 103 mph was recorded the following day. The story was widely publicized as an Associated Press article.
- The longevity and widespread nature of the cold wind event February 12-16 was even more impressive. Wind chills below -50° F were recorded at eight different high-elevation NPS stations across the Brooks Range during this event. At Howard Pass, the *average* air temperature, wind speed, and wind chill for the 5-day period was -38° F, 46 mph, and -82° F respectively.

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Connecting Further

New paper published Recent sea ice increase and temperature decrease in the Bering Sea area, AK

Read more about the Howard Pass wind chill record event at the Deep Cold weather blog.

Access near real-time data from Western Regional Climate Center and MesoWest

Check out the Dec-Jan-Feb weather outlook from the NOAA Climate Prediction Center

Statewide summary of weather highlights in the latest Alaska Climate Dispatch from the Alaska Center for Climate Assessment and Policy

Maps of projected temperature and precipitation changes for the WEAR parks.